AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of claims:

1 - 78. (cancelled without prejudice)

79. (previously presented) A computer based method of building predictive models from transaction data, comprising:

aggregating data from a plurality of transaction systems covering a series of time periods for each of one or more elements of value and one or more aspects of financial performance for an enterprise;

preparing said data for use in processing by:

(a) transforming said element of value data in accordance with one or more pre-programmed functions;

(b) establishing a plurality of input nodes, a plurality of hidden nodes and an output node for a neural network model for each aspect of financial performance;

(c) inputting the raw and transformed transaction data into each neural network model using a separate input node for untransformed transaction data and data that have been transformed by each pre-programmed transformation function by element of value for all time periods in the series;

(d) training each neural network model using said inputs until an error function associated with an output value that corresponds to an aspect of financial performance is minimized;

(e) using one or more weights from the trained neural network models to identify a set of high correlation raw and transformed transaction data by element of value for use in an analysis of element of value behavior or performance,

(f) refining the sets of raw and transformed transaction data by element of value,

(g) creating a summary of the refined transaction data set for each element of value, and

evolving the neural network model for each aspect of financial performance to an optimal state by using the element of value summaries as inputs and training each model with a series of genetic algorithms

where the set of high correlation raw and transformed transaction data comprise a plurality of statistical indicators of an element of value performance,

where the aspects of financial performance are selected from the group consisting of revenue, expense, capital change, cash flow and combinations thereof, and

where the predictive models of aspects of financial performance are useful for completing tasks selected from the group consisting of optimizing a current operation financial performance for a business, predicting an impact of one or more changes to a current operation financial performance, calculating a current operation value contribution for an element of value, determining an impact of an element of value, identifying rules for improving performance, completing a forecast and combinations thereof.

80. (previously presented) The method of claim 79 where a plurality of input nodes is set equal to one plus the number of elements of value.

81. (previously presented) The method of claim 79 where a plurality of hidden nodes is set equal to one plus the number of input nodes.

82. (previously presented) The method of claim 79, where an error function further comprises $ERR(W)_k = 1/2 (R_k - Y(W))^2$.

83. (previously presented) The method of claim 79 where a set of raw and transformed transaction data that will be used as an input to a predictive model further comprises a set of numbers.

84. (previously presented) The method of claim 79 where a neural network model comprises a non-linear, time series model.

85. (previously presented) The method of claim 79 where training a neural network model further comprises using a series of genetic algorithm to complete the training where a population being analyzed is partitioned into a plurality of subpopulations, with each subpopulation being processed by a genetic algorithm independently of the others and where a migration mechanism produces a chromosome exchange between the subpopulations.

86. (previously presented) The method of claim 79 where training a neural network model further comprises using a back propagation algorithm to complete the training.

87. (previously presented) The method of claim 79 where one or more elements of value further comprise elements of value selected from the group consisting of brands, customers, employees, partners, vendors and combinations thereof.

88. (previously presented) The method of claim 79 where a plurality of transaction systems comprise systems selected from the group consisting of advanced financial systems, basic financial systems, operation management systems, sales management systems, human resource systems, accounts receivable systems, accounts payable systems, capital asset systems, inventory systems, invoicing systems, payroll systems, purchasing systems, the Internet and combinations thereof.

89. (previously presented) The method of claim 79 where a series of time periods contains time periods selected from the group consisting of historical time periods, future time periods and combinations thereof.

90. (previously presented) The method of claim 79 where the one or more pre programmed functions are selected from the group consisting of average, rolling average, time delay, trend, average time delay, rolling average time delay, ratio, average ratio, rolling average ratio, slope, average slope, rolling average slope and combinations thereof.

91. (previously presented) The method of claim 79 where training a neural network model further comprises using a genetic algorithm to complete the training where a population being analyzed is partitioned into a plurality of subpopulations, with each subpopulation being processed by a genetic algorithm independently of the others and where a selective crossover and a fitness measure rescaling produces a chromosome exchange between the subpopulations.

92. (previously presented) A program storage device readable by a computer, tangibly embodying a program of instructions executable by at least one computer to perform the steps in a predictive model method, comprising:

aggregating data from a plurality of transaction systems covering a series of time periods for each of one or more elements of value and one or more aspects of financial performance for an enterprise;

preparing said data for use in processing by:

(a) transforming said element of value data in accordance with one or more pre-programmed functions;

(b) establishing a plurality of input nodes, a plurality of hidden nodes and an output node for a neural network model for each aspect of financial performance;

(c) inputting the raw and transformed transaction data into each neural network model using a separate input node for untransformed transaction data and data that have been transformed by each pre-programmed transformation function by element of value for all time periods in the series;

(d) training each neural network model using said inputs until an error function associated with an output value that corresponds to an aspect of financial performance is minimized;

(e) using one or more weights from the trained neural network models to identify a set of high correlation raw and transformed transaction data by element of value for use in analysis,

(f) refining the sets of raw and transformed transaction data by element of value,

(g) creating a summary of the refined transaction data set for each element of value, and

generating an optimized neural network model for each aspect of financial performance by using the element of value summaries as inputs and using a series of genetic algorithms to train each model

where the set of high correlation raw and transformed transaction data comprise a plurality of statistical indicators of an element of value performance,

where the aspects of financial performance are selected from the group consisting of revenue, expense, capital change, cash flow and combinations thereof, and

where the predictive models of aspects of financial performance are useful for completing tasks selected from the group consisting of optimizing a current operation financial performance for a business, predicting an impact of one or more changes to a current operation financial performance, calculating a current operation value contribution for an element of value determining an impact of an element of value, identifying rules, completing a forecast and combinations thereof.

93. (previously presented) The program storage device of claim 92 where a plurality of input nodes is set equal to one plus the number of elements of value times one plus the number of pre-programmed functions used to transform transaction data.

94. (previously presented) The program storage device of claim 92 where a plurality of hidden nodes is set equal to one plus the number of input nodes.

95. (previously presented) The program storage device of claim 92, where an error function further comprises $ERR\ (W)_k = 1/2\ (R_k - Y(W))^2$.

96. (previously presented) The program storage device of claim 92 where a set of raw and transformed transaction data that will be used as an input to a predictive model further comprises a set of numbers.

97. (previously presented) The program storage device of claim 92 where a neural network model comprises a non-linear, regression model.

98. (previously presented) The program storage device of claim 92 where training a neural network model further comprises using a series of genetic algorithm to complete the training where a population being analyzed is partitioned into a plurality of subpopulations, with each subpopulation being processed by a genetic algorithm independently of the others and where a migration mechanism produces a chromosome exchange between the subpopulations.

99. (previously presented) The program storage device of claim 92 where training a neural network model further comprises using a back propagation algorithm to complete the training.

100. (previously presented) The program storage device of claim 92 where one or more elements further comprise elements of value selected from the group consisting of brands, customers, employees, partners, vendors and combinations thereof.

101. (previously presented) The program storage device of claim 92 where a plurality of transaction systems comprise systems selected from the group consisting of advanced financial systems, basic financial systems, operation management systems, sales management systems, human resource systems, accounts receivable systems, accounts payable systems, capital

asset systems, inventory systems, invoicing systems, payroll systems, purchasing systems, the Internet and combinations thereof.

102. (previously presented) The program storage device of claim 92 where a series of time periods contains time periods selected from the group consisting of historical time periods, future time periods and combinations thereof.

103. (previously presented) The program storage device of claim 92 where the one or more pre programmed functions are selected from the group consisting of average, rolling average, time delay, trend, average time delay, rolling average time delay, ratio, average ratio, rolling average ratio, slope, average slope, rolling average slope and combinations thereof.

104. (previously presented) The program storage device of claim 92 where the method further comprises: training a neural network by using a series of genetic algorithm to complete the training where a population being analyzed is partitioned into a plurality of subpopulations, with each subpopulation being processed by a genetic algorithm independently of the others and where a selective crossover and a fitness measure rescaling produces a chromosome exchange between the subpopulations.

105. (previously presented) An apparatus for building predictive models from transaction data, comprising:

(a) a plurality of transaction systems,

(b) means for storing and processing data,

(c) means for preparing data from said transaction systems for use in processing for a series of time periods for one or more elements of value and one or more aspects of financial performance by creating a summary of an element of value performance for each element of value using said data; and

(d) means for developing an optimized neural network model for each aspect of financial performance by using the element of value summaries as inputs and training each model using a series of genetic algorithms

where the summary of element of value performance comprises a summary of a plurality of statistical indicators of an element of value performance, and

where the aspects of financial performance are selected from the group consisting of revenue, expense, capital change, cash flow and combinations thereof.

106. (previously presented) The apparatus of claim 105 where a plurality of input nodes is set equal to one plus the number of elements times one plus the number of pre-programmed functions used to transform transaction data.

107. (previously presented) The apparatus of claim 105 where a plurality of hidden nodes is set equal to one plus the number of input nodes.

108. (previously presented) The apparatus of claim 105, where an error function further comprises ERR (W)k = 1/2 (Rk - Y(W))2.

109. (previously presented) The apparatus of claim 105 where a set of raw and transformed transaction data that will be used as an input to a predictive model further comprises a set of numbers.

110. (previously presented) The apparatus of claim 105 where a neural network model comprises a time series, regression model.

111. (previously presented) The apparatus of claim 105 where training a neural network model further comprises using a series of genetic algorithm to complete the training where a population being analyzed is partitioned into a plurality of subpopulations, with each subpopulation being processed by a genetic algorithm independently of the others and where a migration mechanism produces a chromosome exchange between the subpopulations.

112. (previously presented) The apparatus of claim 105 where training a neural network model further comprises using a back propagation algorithm to complete the training.

113. (previously presented) The apparatus of claim 105 where one or more elements further comprise elements of value selected from the group consisting of brands, customers, employees, partners, vendors and combinations thereof.

114. (previously presented) The apparatus of claim 105 where a plurality of transaction systems comprise systems selected from the group consisting of advanced financial systems, basic financial systems, operation management systems, sales management systems, human resource systems, accounts receivable systems, accounts payable systems, capital asset

systems, inventory systems, invoicing systems, payroll systems, purchasing systems, the Internet and combinations thereof.

115. (previously presented) The apparatus of claim 105 where a series of time periods contains time periods selected from the group consisting of historical time periods, future time periods and combinations thereof.

116. (previously presented) The apparatus of claim 105 where the one or more pre programmed functions are selected from the group consisting of average, rolling average, time delay, trend, average time delay, rolling average time delay, ratio, average ratio, rolling average ratio, slope, average slope, rolling average slope and combinations thereof.

117. (previously presented) The apparatus of claim 105 where preparing data for use in processing further comprises integrating, converting and storing data from a plurality of systems in accordance with a common data dictionary.

118. (previously presented) The apparatus of claim 105 that further comprises: means for training a neural network by using a genetic algorithm to complete the training where a population being analyzed is partitioned into a plurality of subpopulations, with each subpopulation being processed by a genetic algorithm independently of the others and where a selective crossover and a fitness measure rescaling produces a chromosome exchange between the subpopulations.

119 - 155. (cancelled without prejudice)

156. (previously presented) A program storage device readable by a computer, tangibly embodying a program of instructions executable by at least one computer to perform the steps in a neural network development method, comprising:

a) preparing a plurality of input transaction data and ouput data for a population for use in processing by a neural network with a defined target fitness level,

b) defining a structure for the neural network comprising a plurality of input nodes, a plurality of hidden nodes, an output node, a connection between each input node and each hidden node and a connection between each hidden node and the output node,

c) assigning a random weight value to the connections between each node and a target fitness level,

d) creating a plurality of chromosomes that encode the weights between each node,

e) generating a successor set of weight values from said initial set of weight values by evolving the chromosomes with a genetic algorithm, the input data and the output data until the target fitness level is achieved,

f) implementing said neural network with the set of weight values that achieved the target fitness level

where the population being analyzed is partitioned into a plurality of subpopulations, with each subpopulation being processed by a genetic algorithm independently of the others,

where evolving the chromosomes comprises a selective crossover that produces a chromosome exchange between the subpopulations,

where generating the successor sets of weight values comprises a fitness measure re-scaling and a plurality of random mutations, and

where the selective crossover occurs between two or more successive generations.

157. (previously presented) The program storage device of claim 156, wherein a neural network model connects one or more elements of value of a business enterprise to one or more aspects of financial performance of said business enterprise,

where each input node represents an element of value,

where each output node represents an aspect of financial performance,

where the weights between nodes represent a plurality of relationships where each relationship is a function of the impact of an element of value on other elements of value or on an aspect of financial performance, and

where one or more aspects of financial performance are selected from the group consisting of revenue, expense, capital change, cash flow and combinations thereof.

158. (previously presented) The program storage device of claim 156, wherein a neural network model further comprises a business event network model.

159. (previously presented) A computer implemented neural network modeling method, comprising:

a) preparing a plurality of input transaction data and ouput data for a population for use in processing by a neural network with a defined target fitness level,

b) defining a structure for the neural network comprising a plurality of input nodes, a plurality of hidden nodes, an output node, a connection between each input node and each hidden node and a connection between each hidden node and the output node,

c) assigning a random weight value to the connections between each node and a target fitness level,

d) creating a plurality of chromosomes that encode the weights between each node,

e) generating a successor set of weight values from said initial set of weight values by evolving the chromosomes with a genetic algorithm, the input data and the output data until the target fitness level is achieved,

f) implementing said neural network with the set of weight values that achieved the target fitness level

where the population being analyzed is partitioned into a plurality of subpopulations, with each subpopulation being processed by a genetic algorithm independently of the others,

where the evolution of the successor sets of weight values comprises a fitness measure re-scaling and a plurality of random mutations,

where a selective crossover produces a chromosome exchange between the subpopulations, and

where the selective crossover occurs between two or more successive generations.

160. (previously presented) The method of claim 159, wherein a neural network model connects one or more elements of value of a business enterprise to one or more aspects of financial performance of said business enterprise,

where each input node represents an element of value,

where each output node represents an aspect of financial performance,

where the weights between nodes represent a plurality of relationships where each relationship is a function of the impact of an element of value on other elements of value or on an aspect of financial performance, and

where one or more aspects of financial performance are selected from the group consisting of revenue, expense, capital change, cash flow and combinations thereof.

161. (previously presented) The method of claim 159, wherein a neural network model further comprises a business event network model.

162. (previously presented) A program storage device readable by a computer, tangibly embodying a program of instructions executable by at least one computer to perform the steps in a model development method, comprising:

a) aggregating data from a plurality of transaction systems covering a series of time periods for each of one or more elements of value and one or more aspects of financial performance for an enterprise; and

b) analyzing said data with a series of models as required to identify a set of data that can be used to analyze and model each element of value

where one or more elements of value are selected from the group consisting of brands, customers, employees, partners, vendors and combinations thereof.

163. (previously presented) The program storage device of claim 162, wherein the method further comprises analyzing a set of data that can be used to analyze and model each element of value with a series of models as required to identify a plurality of indicators of element of value behavior or performance for each element of value.

164. (previously presented) The program storage device of claim 163, wherein the method further comprises:

a) creating a summary of the indicators for each element of value,

b) using the element of value summaries as inputs to a neural network model for each of one or more aspects of enteprise financial performance,

c) optimizing a configuration of each neural network model by creating a plurality of chromosomes that encode the weights between each node of the model and training the models with a series of genetic algorithms, and

d) using the optimized neural network models for identifying rules for improving performance and completing tasks selected from the group consisting of optimizing a current operation financial performance for a business, predicting an impact of one or more changes to a current operation financial performance, calculating a current operation value contribution for an element of value, determining an impact of an element of value, completing a forecast and combinations thereof

where the aspects of enterprise financial performance are selected from the group consisting of revenue, expense, capital change, cash flow and combinations thereof, and

where optimizing the configuration of each neural network model comprises a selective crossover that produces a chromosome exchange between two or more successive generations.